Clinical Excellence Initiatives
to improve Healthcare Safety & Quality

An Insight into the importance of initiatives to improve clinical excellence, and how GS1 standards can facilitate this

Professor Cliff Hughes AO
21 March 2012
Accommodating Mistakes?

I cdnuolt blveiee taht I cluod aulaclty uesdnatnrd waht I was redanig. The phaonmneal pweor of the hmuan mnid. Aoccdrnig to rscheearch at Cmabrigde Uinervtisy, itd eosn't mttaer in waht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteer be in the rghit pclae. The rset can be a taotl mses and you can sitll raed it wouthit a porblem. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe. Amzanig huh? yaeh and I awlyas thought slpeling was ipmorantt!
Safe Driving - NSW

Road Traffic Accident Fatalities 1934-2003

Number Killed

Year

(435) 376
Mission

• To build confidence in health care by making it demonstrably better and safer for patients and a more rewarding workplace
The Role of the CEC

- To promote best practice systems for clinical quality and patient safety.
- To support Area Health Services in the implementation of their clinical systems
- To monitor the state of clinical quality and patient safety in the NSW Health system
- To provide education and training for clinicians, consumers and health managers on the implementation of clinical quality systems
- To provide advice to the Minister on matters relating to clinical quality and patient safety.
Clinical Governance:

"A framework through which … organisations are accountable for continually improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish." (Scally and Donaldson, 1998)
Call to Action

• To ensure that patient safety and quality care are at the heart of what you do
• To lead a quality and safety culture and empower and support clinical teams to deliver care of the highest possible standard
Will you take these challenges?

Can you demonstrate in the next 3 months that you:

• Spend more than 25% of the Board’s meeting time on quality

• Make quality the first item on the agenda

• Routinely hear first hand patient stories of care that occurred at the organisation

• Set a broad spectrum of patient safety targets to monitor
IIMS enthusiasm

NSW Trend - IIMS Monthly Notifications

CF Hughes: 21 march 2012
The CEC
A resource for improvement

Between the Flags
Keeping patients safe
A statewide initiative of the Clinical Excellence Commission
From the Beach to the Bed:
Lessons for the recognition and management of the deteriorating patient

Professor Cliff Hughes AO
Clinical Excellence Commission
21 March 2012
The Problem

Missed opportunities to:

• prevent
• recognise
• escalate
• respond
The Solution

Intervention on the Slippery Slope

Prevention

Clinical Review

Rapid Response

ALS

Patient Condition

Time
The Solution

Intervention on the Slippery Slope

Prevention → Clinical Review → Rapid Response → ALS

Patient Condition vs. Time

The Solution
The Solution

Intervention on the Slippery Slope

Patient Condition

Time

Prevention

Clinical Review

Rapid Response

ALS
The Solution

Prevention

Rapid Response

Clinical Review

ALS

Patient Condition

Intervention on the Slippery Slope

Time
Maternity - front and back pages

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**Clinical Review Criteria**

- Poor peripheral circulation
- Measured or estimated cumulative blood loss
  - 1000–1500ml
- Respiratory Rate: 10–20 breaths per minute
- SpO₂ ≤ 90% or ≤ 94% if ≤ 35 weeks of gestation
- Systolic Blood Pressure ≤ 90 mmHg
- Bradycardia: < 60 bpm
- Heart Rate < 40 or ≥ 140 beats per minute

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**Rapid Response Criteria**

- SpO₂ ≤ 90% and/or increase in oxygen (O₂) requirement
- Systolic Blood Pressure ≤ 90 mmHg
- Diastolic Blood Pressure ≤ 45 mmHg
- Heart Rate ≤ 40 or ≥ 140 beats per minute
- Only responds to central pain (FP) or unresponsiveness
- sudden decrease in Level of Consciousness (LOC) of ≥ 2 points on GCS
- Temperature ≥ 39°C or ≤ 35.5°C
- Blood Glucose Level ≤ 2.2 mmol/L
- Pathological Cardiogram (CTG)
- Serious concern by any shift member or family member

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**IF A WOMAN HAS ANY ONE (1) OR MORE CLINICAL REVIEW CRITERIA PRESENT, CALL FOR A RAPID RESPONSE (REFER TO YOUR LOCAL ESCALATION PROTOCOL) AND**

1. You MUST initiate appropriate clinical care.
2. Inform the Nurse/Midwife in Charge.
3. Repeat observations as indicated by the woman's condition.

---

**Interventions/Comments**

1. 
2. 
3. 
4. 
5. 

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**Documentation**

1. Write interventions on the front of the chart under 'Interventions/Comments'.
2. Write treatment, escalation process, and outcome in the clinical record.
3. Write date, observers, and designation with each entry.
Paediatric Charts- front and back pages

### 1-4 Years

**STANDARD PEDIATRIC OBSERVATION CHART (SPOC)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**OTHER CHARTS IN USE**
- [ ] Fluid Balance
- [ ] Intraosal Infusion
- [ ] Neurological
- [ ] Pain / Epidural / Patient Control Analgesia
- [ ] Neurovascular
- [ ] Other

**VARIATIONS TO FREQUENCY OF OBSERVATIONS**

<table>
<thead>
<tr>
<th>Date</th>
<th>Frequency Required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**MEDICAL OR RAPID RESPONSE OFFICER**

- [ ] Name

**SIGNATURE**

**ALTERATIONS TO CALLING CRITERIA**

**DATE**

**TIME**

**Respiratory Rate**

**SpO2**

**Heart Rate**

**Other**

**MEDICAL OFFICER NAME**

**MEDICAL OFFICER SIGNATURE**

**ATTENDING MEDICAL OFFICER SIGNATURE**

**INSTRUCTIONS**

**These instructions explain when to make a clinical review or rapid response call. Your local escalation protocol will explain how to make a call.**

**Blue Zone Actions**

- If a child has any one (1) blue zone criterion present you must increase the frequency of observations as clinically appropriate. This may include:
  1. Provide appropriate cardiac care.
  2. Manage pain, pain and glucose level.
  3. Call for a Clinical Review or Rapid Response at any time if you are unsure whether to call.

**Additional Yellow Zone Criteria**

- Altered mental state, agitation, confusion, or incontinence.
- Non-essential observations: Between the patient’s condition, but at least within 30 minutes.
- If called for a Clinical Review and it has not been attended within 30 minutes, you must activate your local rapid response protocol.
- If the patient’s observations enter the red zone while you are making a Clinical Review, you must activate your local rapid response protocol.
- You may call for a Clinical Review or Rapid Response if you are worried about a patient or are unsure whether to call.

**Additional Red Zone Criteria**

- BSL of 2pg/mL or symptomatic.
- New or prolonged seizure activity.
- Significant bleeding:
  - Sudden decrease in level of consciousness of 20 points on GCS.

**If a child has any one (1) red zone criterion present, call for a rapid response (refer to your local escalation protocol).**

**Check the clinical record for advance care directives or alterations to calling criteria which may affect whether a clinical review or rapid response call is indicated.**

**Documentation**

- Write interventions on the front of the chart under “intervention.”
- Write date, signature and designation with each entry.
## Paediatrics - Neonatal / Under 30 days

### Observational Chart

#### Neonatal / Under 1 Month (Corrected)

<table>
<thead>
<tr>
<th>Time (h)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<tr>
<td>Temperature</td>
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<td>Urine Output</td>
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<tr>
<td>Oxygen saturation</td>
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<td>Heart Rate</td>
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<tr>
<td>Respiratory Rate</td>
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</tbody>
</table>

#### Assessment of Respiratory Distress (Neonates)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apnea &amp; Feeding</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Respiratory Rate</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Oxygen Saturation</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clinical Appearance</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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### Additional Criteria for Escalation on Back Page

- Consider earlier escalation of patients with:
  - Chronic or complex conditions
  - Post-operative
  - Pre-existing cardiac or respiratory conditions
  - Fainting spells
  - Poor feeding or post-term neonates
  - Congenital conditions

### Assessment of Respiratory Distress (Neonates)

- Mild
  - Normal
  - Nasal flaring
  - Normal oxygen saturation
- Moderate
  - Nasal flaring
  - Grunting
  - Vigorous crying
- Severe
  - Nasal flaring
  - Grunting
  - Wheezing
  - Cyanosis

---

**Page 2 of 4**
Overall the BTF has benefitted patient safety in our dept/unit/district/station

Strongly Agree Agree Neutral Disagree Strongly Disagree

Metro

10
26
113

Rural / Regional

6
13
67
185

S/W services

5
13
71
89

NSW

21
52
251
476

CF Hughes 21 March 2012
Our BTF clinical lead (champion) has been critical to the uptake and acceptance of the program by clinicians in our dept/unit/station/district.
NSW Central Line Associated Bacteraemia – ICU Project

AR Burrell, M-L McLaws, A Pantle, M Murgo, E Calabria
Guideline and checklist

Central Venous Catheter Insertion Checklist

Date of Procedure | Name of Procedurelist:
/ / 2 0 0 8

Name of Assistant

Name of Supervisor

Where was the line inserted? ICU O ED O OT O Other O Specify:

Catheter Type
Central O Dialysis O PICC O Other O Specify:

Catheter Gauge

Insertion Site
S/Cather O Jugular O Femoral O Gastrostomy O Subclavian O Other O Specify:

Position Right O Left O Specify:

In the Procedure?
Elevate O Emergency O Radio O Replacement O Muscle Mass:

Number of Lumen
1 O 2 O 3 O 4 O 5 O Line Coating Antibacterial O Anticlot O None O

Local Anesesth

Name (Print)

Signature

If not, this section of the form will be completed by the staff member assisting the procedure:

BEFORE THE PROCEDURE

Undertake competency assessment (if unsupervised)? Yes O No O

If the procedure is:

Clearance hand (2 minutes hands with approved solution)? Yes O No O

DURING THE PROCEDURE

Prepare procedure site with chlorhexidine/iodine 30 seconds for dry site; 2 minutes for moist site (e.g. external):

Ensure sterile technique for the procedure:

Wear sterile gloves and sterile gown during the line insertion:

Wear hat, mask, and protective eyewear in patient area (to be worn):

Maintain sterile technique during procedure and dressing:

Complete multiple passes (if any):

AFTER THE PROCEDURE

Was drawing start or date documented on ICU care plan:

If catheter position confirmed by fluoroscopy or X-ray:

If catheter position confirmed by transducer:

If any of the following complications occur:

Date of Line Removal:
/ / 2 0 0 8

Date Discharged from ICU:
/ / 2 0 0 8

Fax form to CEIC at 02 9382 7548 when:

CVC - related BSI detected:
Yes O No O

If yes, Date of Blood Culture:
/ / 2 0 0 8

This form is part of the Patient Medical Record and is to remain in Medical Records after the event.

HEALTHCARE ASSOCIATED INFECTIONS

Central Venous Catheter Insertion — Standard

Mandatory central venous catheter insertion principles

- CVC insertion is a complex procedure requiring maintenance of a sterile field to reduce the risk of local or systemic infection.
- Only trained or experienced clinicians must insert a CVC. All clinicians now to the insertion of a CVC must complete a training program.
- Multiple attempts at CVC insertion increase the risk of mechanical and infectious complications. An escalation procedure to minimise this risk should be followed.
- Aseptic ongoing maintenance of a CVC is essential. Refer to guidelines for post insertion care (insert hyperlink to guidelines).

Safe insertion - summary

A procedure must comply with the following when inserting a CVC:

- Confinement of the insertion site to the patient.
- Seek procedure support from an assistant or supervisor.
- Perform hand hygiene.
- Avoid any exposure to Patients in the immediate vicinity.
- Maintain sterile technique during the procedure and dressing.

The clinical team responsible for the patient must:

- Review the CVC daily.
- Remove the CVC as soon as practicable.

Escalation procedure

Multiple passes at the insertion site may increase the risk of complications. Therefore it is recommended that:

- Passe by a junior clinician should be limited to two at the same site after which no further attempts at cannulation should be made and a change of proceduralist should occur.
- Number of passes by a senior clinician should be governed by clinical judgement. Where multiple insertion failure has occurred, the senior clinician should consider using an alternate proceduralist, radiologist or ultrasound guidance.

Quick reference to the insertion of a central line:

Insertion site
More than one cannulation at the same insertion site.

Insertion failure
Unsuccessful cannulation after a multiple pass or arterial puncture.

Assistance and supervision

Only trained or experienced clinicians must insert a CVC. All clinicians now to the insertion of central lines in NSW must complete a training program that has both knowledge and practical components. The minimum training requirements for CVC insertion are outlined in the CVC Training and Education Framework (insert hyperlink). Supervision requirements are also specified.
Results

• Data on 10,890 line insertions
• Concurrent incident review:
  – Retained/lost guidewires
  – Arterial puncture
  – Multiple passes
  – Inadequately secured lines
  – Inadequate position check prior to use
  – Lack of access to ultrasound equipment
  – Policy breaches
• Training & supervision common themes
• Safety Alert for guidewires issued
• Training framework developed
Checklist Compliance:

<table>
<thead>
<tr>
<th>Item</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competency assessed</td>
<td>48.3% (22.9% no, 28.8% missing)</td>
</tr>
<tr>
<td>Hat, mask, eyewear</td>
<td>79.9%</td>
</tr>
<tr>
<td>Hands washed 2 mins</td>
<td>91.6%</td>
</tr>
<tr>
<td>Sterile gown/gloves</td>
<td>95.9%</td>
</tr>
<tr>
<td>Alcoholic chlorhexidine prep allowed to dry</td>
<td>95.8%</td>
</tr>
<tr>
<td>Entire patient draped</td>
<td>93.4%</td>
</tr>
<tr>
<td>Sterile technique maintained</td>
<td>95.6%</td>
</tr>
<tr>
<td>No multiple passes</td>
<td>80.9%</td>
</tr>
<tr>
<td>Confirm position radiologically</td>
<td>74.3%</td>
</tr>
<tr>
<td>Other method to confirm placement</td>
<td>43.6% (44.7% no, 11.7% missing)</td>
</tr>
</tbody>
</table>
Impact of compliance

• Non compliance with the ‘clinician bundle’:
  – relative risk of CLAB was RR 1.62 (95% CI 1.1-2.4, p=0.0178)
  – For central lines RR 1.99 (95% CI 1.2-3.2 , p=0.0037)
  – For PICC RR 5.08 (95% CI 1.03-25 , p=0.059)
  – Dialysis catheters – no difference

• If compliant with both ‘clinician bundle’ and ‘patient bundle’ then
  – risk of CLAB was RR 0.6 (95%CI 0.4-0.9, p=0.0103)
NSW Blood Budget 2008-2009

- NSW’s total projected Blood Budget for the year 08-09 was $257,519,200
  – made up as follows:
  – State contribution (37%) $95,282,113
  – Commonwealth contribution (63%) $162,237,087
Proportion of red cell transfusions occurring in metropolitan teaching hospitals which are either above or below the state average (2005-2006)
(calculated as casemix adjusted relative use index: source data CEC red cell data linkage project NSW)
Within this region individual patient factors determine transfusion threshold.
Red Cell Audit Results 2007

- 12.7% anaemic & had surgery with Hb’s under 105g/L
- 4% received transfusion with Hb’s over 100g/L
- 95% had post-op transfusion with Hb’s over 70g/L
- Standard dose 2 units
Blood Myths & the Evidence

**Myth Busted**

A blood transfusion will get my patient home sooner...

There is emerging evidence that patients transfused after surgery stay longer in hospital and have more infections following discharge. The CART Study shows that transfusion is independently associated with longer ICU, ward and hospital length of stay and increased mortality. Overall, there were more complications in the patient cohort and the number of RBC units transfused was an independent predictor of adverse clinical outcome.

In addition, a 2006 study of blood transfusions during cardiac surgery randomized that there was a dose-dependent relationship between blood transfusion and functional recovery for the patient, with an increase in the units of packed cells transfused.

**Myth Busted**

Blood, it's safer than it's ever been...

Bacterial contamination, incompatibility reaction and transfusion-related acute lung injury (TRALI) are still the most common and most immediately dangerous complications of blood transfusion.

- **Serious Risks**
  - **Bacterial contamination**
    - **Risk**: 1-25 in 10,000
  - **Serious adverse reactions**
    - **Risk**: 1-20 in 10,000
  - **Acute transfusion reaction**
    - **Risk**: 1-10 in 10,000
  - **Delayed adverse reactions**
    - **Risk**: 1-10 in 10,000
  - **Transfusion-transmitted viral risk**
    - **Risk**: 1 in 100,000

Patients are often still concerned about the risk of Hepatitis or HIV from blood transfusions. However recent WHO/WHO statistics show us that the risk of contracting transfmissible viruses is in rare circumstances in Australia.

**Myth Busted**

Blood transfusions improve healing...

Current, emerging evidence shows that patients who receive blood transfusions are at greater risk of transfusion associated adverse outcomes such as infection, kidney failure, lung injury or death.

A recent study on end of life transfusions and measured iron levels in critically ill patients concluded that transfusion rates were higher in those patients transfused compared to those who waited. Mortality and length of stay/intensive care unit and hospital stay was significantly higher in transfused patients, even when corrected for illness severity.

Transfused patients, even after adjusting for survival probability, had significantly:
- higher measured infection (OR 14.3% vs 5.0%; P = .001)
- longer ICU LOS (15.2 vs 3.3 days; P = .001)
- longer hospital LOS (16.3 vs 6.9 days; P = .001)
- higher mortality rates (21.9% vs 12.5%; P = .001)

A blood transfusion is a living tissue transplant. With any tissue transplant the human body is essentially primed to react to something foreign. The safety implications of this are significant. Remember—consider all the factors, not just lab, before transfusing.

For more information about adverse reactions to blood transfusions go to: www.ccc.health.nsw.gov.au and www.transfusion.com.au

For more information about appropriate transfusion practices go to: www.ccc.health.nsw.gov.au and www.transfusion.com.au
Overall % of Reduction in Red Cell usage in NSW Teaching Hospitals for in Patients 2007-2008

<table>
<thead>
<tr>
<th>2006-2007 performance</th>
<th>Teaching Hospital</th>
<th>% improvement by hospital to previous year*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest</td>
<td>A</td>
<td>-19%</td>
</tr>
<tr>
<td>Relative use</td>
<td>B</td>
<td>-24%</td>
</tr>
<tr>
<td>Intermediate</td>
<td>C</td>
<td>-5%</td>
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<td>Lowest</td>
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*Overall hospital activity increased during 2007-2008

• This figure is an underestimate due to only hospital overnight admissions being included,

• 9168 units were saved.

• Equates to a direct product cost of approximately $2,383,855 savings across the State (based on AUD$260 per unit). This figure is inclusive of Commonwealth Government’s 63% contribution to the States blood budget.
Speeding

Speeding. No one thinks big of you.
NSW Statistics

Fatalities per 100,000 Pop

1908 (7.6)

Peak of Roaring 1920s

1930s Depression

WWII

1950-1960s Rapid Motorisation

Oct 1971 Compulsory Seatbelts

Dec 1982 RBT

1990 RS 2000 Strategy

Year

0 5 10 15 20 25 30

Broken Windows!

1. The Bronx
   10 minutes
   24 hours
2. Palo Alto
   1 week
3. Add a sledge hammer!
   Minutes
   a few hours!

*Zimbardo cited in Wilson JQ Kelling GL

CF Hughes: 21 March 2012
Fig. 1.

The CEC Quality results

10% reduction in inappropriate use of blood products
$2.3 million saving in direct product cost

60% reduction in central line associated bacteraemias in ICU
5 to 8 lives saved
$2.4 million saving of additional costs associated with the infection

Over 150 clinical improvement projects were undertaken by the 2009 cohort

CF Hughes 21 March 2012
Leadership setting the tone

• “You must be the change you wish to see in the world”
  • Mahatma Ghandi